

REMARKS/ARGUMENTS

New claim 22 has been added requiring a specified Ta content, support for which exists at page 11, lines 3-4.

Claims 1, 3, 4, 6, 7 and 10-21 are currently pending, although claims 11-16 have been withdrawn from consideration. Upon indication of allowable subject matter, Applicants currently intend to seek rejoinder of withdrawn claims as appropriate.

The Office Action rejected claims 1, 3, 4, 6, 7, 10 and 17-21 under 35 U.S.C. § 103 as obvious over JP 06-240392 (“JP 392”) in view of U.S. patent 3,980,473 (“Costin”). In view of the following comments, Applicants respectfully request reconsideration and withdrawal of this rejection.

The Office has asserted that Costin discloses a Co based alloy containing 0.25-1.5% titanium, and that it would have been obvious to add titanium to the alloy of JP 392 as disclosed in Costin “to improve the corrosion resistance and high temperature strength of the alloy....” (Office Action at page 3). However, these assertions miss the point of the present invention.

The invention alloys comprise 0.5-5% titanium and “carbides of titanium, said carbides optionally further comprising tantalum.” Thus, the claims require the presence of the required Ti amounts in a specified alloyed. This alloy does not include Hf or Zr.

Indeed, the claims previously stated that the carbides could optionally be of Hf or Zr as well as Ta, but the claims were amended to focus only on carbides of Ta. Further, the claimed alloy “consists essentially of” the identified elements which do not include Hf or Zr.

Stated another way, the claims are directed to specified alloys which do not contain Hf or Zr (except for, perhaps, impurity amounts less than 0.1%) but which contain 0.5-5% Ti which, in the specified amounts, provides significant benefits to the claimed alloys lacking Hf and Zr (as demonstrated in the Rule 132 declaration submitted in this case).

This is particularly true for new claim 22 which excludes 5% Ta. Because JP 392 discloses compositions containing at least 5% Ta (see, abstract), the combination of applied references cannot teach or suggest the alloy of claim 22.

Further in contrast to the present invention, JP 392 requires the presence of Hf -- it is an essential component. Thus, any combination of JP 392 with another reference (such as Costin) will necessarily result in a composition containing 0.1-5% Hf. (See, abstract). This is directly contrary to the claimed alloy which “consists essentially of” the identified elements (which do not include Hf).

Costin would not motivate one of ordinary skill in the art to modify the teachings of JP 392 and omit Hf from the alloy.

First, because JP 392 appears to associate improved properties of its compositions with the presence of Hf, removing Hf from JP 392's compositions would lead to an inferior product and would render such Hf-free compositions in JP 392 unsuitable for their intended purposes. Such a deleterious modification is not allowed when combining references for purposes of an obviousness analysis. For at least this reason, Applicants respectfully submit that the pending rejection is improper and should be withdrawn.

Second, contrary to the Examiner's assertions, Costin does not teach or suggest that specific Ti concentrations relate to better corrosion resistance and high temperature strength of the composition of alloys. The passage in Costin cited by the Office Action for this purpose, col.1, lines 29-33, states:

Accordingly, it is the object of this invention to provide a cobalt-base alloy having superior stress-rupture and creep properties, an alloy which can be vacuum melted and cast and which is particularly resistant to corrosion by molten glass.

This is merely a general indication of Costin's goals, and nowhere does it identify Ti amount as being result effective. Indeed, to the contrary, Costin states (at col. 1, lines 53-60) that :

In the above composition, the weight ratio of wolfram to tantalum will be within the range of from about 1.2 to about 3.4 and the weight ratio of zirconium to titanium will be within the range of from about 1 to about 6. The total quantity of dysprosium and yttrium will be not less than about 0.10 weight percent of the composition.

Clearly, Costin teaches that W, Zr and Y are essential materials to include in the composition to get the desired performances of the alloys, not Ti. Thus, Costin neither teaches nor suggests the result effective nature of Ti.

Further, and as already explained in previous responses, Applicants demonstrated the criticality of titanium concentration with respect to the claimed invention in the previously submitted Rule 132 declaration -- 0.5% titanium and 0.4% titanium concentrations yield spinners having vastly different useful lives. This difference is significant, and demonstrates the inventiveness of the present invention.

Claim 1 requires at least 0.5% titanium. This amount of titanium has been optimized, and yields spinners having vastly improved useful lives. To establish a *prima facie* case of obviousness with optimization of a range, "the prior art must recognize the variable as a result effective variable that can be optimized." See M.P.E.P. § 2144.05 II A. However, none of the applied references, including Costin as noted above, provide any suggestion that titanium concentration is a result effective variable that can be optimized. Stated another way, Costin teaches that no difference exists between 0.5% titanium and 0.4% titanium and 0.25% titanium, so it cannot teach or suggest to one of ordinary skill in the art that titanium

concentration is a result effective variable. It was not until the present application that this invention was placed into the hands of the public (as evidenced by the Rule 132 declaration).

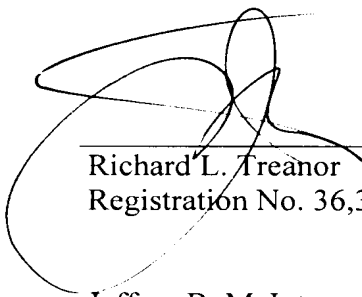
In fact, considering the art of record as a whole (which the Office must do), it is clear that one of ordinary skill in the art would not have been led to optimize titanium in manner required by the pending claims. JP 780, a reference relevant enough for the Office to base a previous rejection upon, teaches away from such high titanium concentrations, expressly stating that the upper limit is 0.4% titanium. Given this express teaching to the contrary, the asserted art as a whole could not lead one of ordinary skill in the art to the claimed invention.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103.

Applicants believe that the present application is in condition for allowance. Prompt and favorable consideration is earnestly solicited.

Respectfully submitted,

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